Report on the Macroeconomic Forecasts in the Draft General Government Budget for 2017

Executive summary

AIReF, on the basis of exogenous assumptions and defined policies, endorses the Government's macroeconomic forecast. AIReF deems the Government macroeconomic scenario accompanying the 2017 Draft General State Budget to be prudent overall.

The assumptions reflecting risks deriving from the external environment are viewed as prudent. The hypotheses regarding growth among principal partners, the trend in oil prices, the cost of financing debt and the exchange rate are deemed prudent , as they show a more unfavourable trend for these factors than assumed in more recent forecasts by international organisations and market assessments.

The composition of growth is deemed likely, with domestic demand driving the economy jointly with a positive contribution from the external sector. Among the components of the domestic demand, private consumption maintains a high growth rate (above 3%), which is in line with an intense recovery in Employment and stable monetary conditions. In turn, the trend in public consumption is viewed as feasible despite upward risks. As for investment, the Government's updated forecasts envisage a more pronounced deceleration than projected in the 2017 Draft Budgetary Plan Update, with growth rates for investment in construction presenting a downward bias compared both with consensus figures and with AIReF's models results. The External Sector contribution is also considered to be likely, as it stands on moderately positive ground and is in line with AIReF's internal forecasts.

The most recent indicators on economic developments and the information regarding year end budget figures for 2016, have had a moderating effect on risk assessment and uncertainty in the forecasts for 2017. On the one hand, there are upward risks in GDP with respect to the official GDP forecast, essentially deriving from factors boosting short-term growth. As for domestic demand, it must be noted that gross fixed capital formation, currently at the lower end of the panelists' interval, may benefit from the consolidation of the property market recovery and the absorption of surplus stock of housing. Similarly, the degree of uncertainty on external demand appears to be limited, but may increase driven by the uncertain results of Great Britain's negotiations over *Brexit* and by the upcoming elections in several big economies of the European Union. Likewise, the manner in which the new US Administration's economic policies are designed adds certain risks related to a more restrictive monetary policy by the Federal Reserve, and protectionist policies that, if materialized, would be harmful to the global and the European economy.

As for budgetary issues, uncertainty has diminished in comparison with the Report on the macroeconomic forecasts in the Draft Budgetary Plan Update for 2017, despite certain risks. Year-end figures for 2016 confirm the restrained path followed by expenditure, reducing uncertainty regarding the implementation of the policy for controlling public expenditure included in the public consumption forecasts as well as those deriving from the expenditure ceiling approved for 2017. However, certain upward risks remain concerning public consumption developments. On the one hand, consolidating the adjustment -which in some cases has required some spending to be postponed to subsequent years- may begin to generate upward pressure in the execution of some items. In addition, public consumption depends fundamentally on the behaviour of Autonomous Regions and Local Corporations. Therefore, the actions taken by the mentioned subsectors and the proper implementation of the expenditure rule will be key to maintaining this aggregate within the foreseen levels. With regard to the impact of the measures announced in late 2016, the most recent data once again point to a significant effect on revenue. It should be remembered, nevertheless, that effective monitoring throughout the year is necessary to assess its adequacy for meeting the targets and achieving the effect envisaged by the Government.

On the basis of its analysis, **AIReF deems the progress made by the Government concerning transparency and the dissemination of information to be limited.** In this line, AIReF believes that greater transparency would lead to a positive effect in terms of credibility and, therefore, makes one recommendation and two suggestions for good practices.

AIReF recommends the Government:

1. **To accompany the macroeconomic outlook with a "no policy change" scenario, and a separate quantification of the impact from the adopted or envisaged measures**, in order to better understand the forecasts and to make explicit at all times the connection between the macroeconomic outlook and the budget scenario.

AIReF also submits to the Government two suggestions for good practices:

1. To integrate the key elements in the forecasts into a simplified national accounting framework, thus enabling the public to understand the connections between economic activity, demand and expenditure, on the one hand, and income flows and borrowing requirements, on the other hand.

2. To provide more information on the relevant methodologies, assumptions and parameters underpinning the forecasts, thus adhering to the requirements set forth in Directive 2011/85 on budget frameworks, and article 29 of the LOEPSF that defines the content of General Government sector budget plans in the medium term.

1. Introduction

In its report on the macroeconomic forecasts associated to the Budgetary Plan Update for 2017 (APP 2017), which were presented by the Government in December 2016, AIReF endorsed the macroeconomic outlook, finding the forecasts for 2017 to be prudent overall but subject to risks associated to external assumptions and to the forecast revenues. In response to the request by the European Commission, in late 2016 the Government of Spain submitted a Draft Budgetary Plan Update containing information on the budgetary measures that would allow compliance with the deficit target of 3.1% of GDP for 2017. In this context, AIReF published the required report on the macroeconomic scenario accompanying the Draft Budgetary Plan update. The macroeconomic forecasts were deemed likely overall, and were endorsed, despite pointing out two major risks: on the one hand, possible risks stemming from developments in the external environment and, on the other hand, the existing uncertainty over the cyclical revenue gain for 2017 and the inherent difficulty in estimating the impact on revenue of the measures announced.

Approval of the draft General State Budget (PGE) for 2017 implies the requirement for AIReF to submit a further report, after an interval of four months, on the official Government forecasts for 2017. The exceptional circumstances in the budget cycle for 2017 caused the 2016 General State Budget to be extended to 2017, as envisaged in article 134.4 of the Spanish Constitution. After forming the Government, the General Government Budget for 2017 will be presented in the Spanish Parliament early in April 2017. As provided for in the Organic Law creating the AIReF, the macroeconomic forecasts accompanying the Draft PGE 2017 should include a report by the Authority stating its endorsement of said forecasts. The present report fulfils the mentioned mandate.

Assessment of the macroeconomic forecasts is conducted from a double focus, analysing *ex-post* the biases shown in previous years' forecasts and assessing *ex-ante* the realism of the forecasts in the draft General State Budget (PGE) for 2017. As in previous editions, this report consists of two main sections, one for an assessment of the previous years' forecasts (Section 2) and another for a detailed analysis of the forecasts for 2017 (Section 3). Section 4 gives an overview of the findings and conclusions drawn from this assessment, and offers two suggestions for good practices and one specific recommendation.

2. Macroeconomic forecasts for the period 2013 to 2016

2.1 Criteria for comparing forecasts

This section examines the biases in forecasts drafted by the Government over the last four years.[1] Unlike previous macroeconomic scenarios attached to the PGE that were usually drafted in the autumn of the preceding year, the current forecast was drafted in the spring of this year. For this report, the data used for drawing the comparison are taken from the panel of forecasts published by FUNCAS in the month of March for the years 2013 through 2016.

This analysis is conducted solely in relation to forecasters included in the FUNCAS panel, excluding other private forecasts and those conducted by the European Commission, the Bank of Spain, the OECD or the IMF. Panel forecasts have the advantage of being the last to be published before the presentation of the macroeconomic forecasts (i.e. in mid-March each year). Furthermore, all the forecasts are published simultaneously, making comparisons among these or against Government forecasts easier. They thus become a clear reference in terms of independence and predictive outcome for the main macroeconomic variables. Moreover, though international organisations' forecasts may include a wider range of variables for comparison, the available information for drafting them is not the most recently updated and should therefore be treated separately from private institutions' forecasts.

Any bias in the Government forecast that is large, unjustified and repeated in several consecutive years will be considered to have a significant bias. The bias in a variable is defined as the difference between two forecasts for that variable. In order to gauge whether a bias has been significant, the Government forecasts (G) are compared against other recent forecasts by private institutions, published in the consensus forecast (C), and against the observed result (R). A bias is large when the Government forecast falls without the interquartile range of the distribution among the panel of forecasts.[2] Government forecasts' deviation from the consensus forecast will be deemed unjustified when the absolute forecast error is larger than that of the

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[1] Article 14.4 of the Organic Law creating the AIReF requires this report to include an assessment of whether the macroeconomic forecasts display any considerable bias over a period of four consecutive years, according to COUNCIL DIRECTIVE 2011/85/EU, of 8 November 2011, on the requirements applicable to member States' budget frameworks.
[2] The interquartile range is a dispersion measure defined as the difference between the first and third quartile, thus encompassing 50% of observations close to the mean.

consensus forecast; that is, if |G-R|>|C-R|. To this effect, no analysis is made of the reasons that may explain the differences observed.

2.2 Ex-post assessment of the forecasts for 2013-2016

Biases have been identified previously in the official spring forecasts, although the majority have not been judged unjustified ex-post. AIReF has already mentioned the existence of large biases in the forecasts for the current year in most cases assessed for the period 2013-2015, regarding both GDP and the deficit-to-GDP ratio.[3] In 2016, half of the variables observed showed a large bias and were found to be unjustified ex-post, for the first time, in the cases of Capital formation and Imports.

Approximately one half of forecasting errors are identified as large.[4] Having examined the main variables forecast over the last four SPUs, it is observed that such errors are distributed symmetrically both in the forecasts for the current year and in those for the following year. Nevertheless, ex-post analysis shows that, of these errors, only just under 50% were unjustified. This result is very similar, throughout all forecasts, to the results found in the macroeconomic scenarios drafted in the autumn and that usually accompany the General State Budget.[5]

However, the overall results conceal major differences, both regarding variables and the time horizon. As shown in table 1, the forecasts for private consumption stand out as the item posing the greatest projection difficulties, with large forecasting errors in 75% of cases for the current and following years alike. It should be noted, however, that only a small percentage of these errors has been found to be unjustified. Conversely, large errors have been found in almost 40% of forecasts for public consumption, all of which were found to be unjustified. Qualitatively, this situation is the inverse to that found in the forecasts drafted in the autumn, in which few large forecasting errors in private consumption were found but a relatively high proportion were detected in public consumption, especially for the following year. Lastly, the external sector budget items stand out for their minimal rate of large errors, particularly in the case of exports.

No large biases are found in the last four springs´ forecasts, although special attention should be paid to the forecast for public consumption, deficit-to-GDP

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[3] Report on the Macroeconomic Forecasts for the Kingdom of Spain's Stability Programme Update (SPU) project 2016-2019
[4] The result from comparing the Government forecasts with other forecasts for the same period are given in the Report on the Macroeconomic Forecasts in the Draft General Government Budget 2016
[5] Report on the Macroeconomic Forecasts in the Draft Budgetary Plan Update for 2017

and the unemployment rate. In contrast with the autumn forecasts, the spring forecasts have not shown a large and unjustified bias in any budget items for four consecutive years. Nevertheless, the forecasts for 2015 and 2016 drafted in the spring of the previous year did show large errors in all items of domestic demand, unemployment rate and deficit-to-GDP. The above may suggest a slight worsening of forecasting precision, particularly in public consumption and the deficit-to-GDP ratio, in which errors have proved to be unjustified ex-post.

	Last year's forecasts for the current year		This year's forecasts for the current year		All forecasts	
	Large %	Large and unjustified %	Large %	Large and unjustified %	Large %	Large and unjustified %
GDP	25	-	75	33	50	25
Private consumption	75	-	75	33	75	17
Public consumption	50	100	25	100	38	100
GFCF	75	67	50	50	63	60
Exports	25	100	-	-	13	100
Imports	50	50	25	100	38	67
Unemployment	50	-	75	-	63	-
Deficit-to-GDP	75	67	50	50	63	60
All items	53	47	47	40	50	44

Source: Drafted by AIReF using data from INE, MINECO, Bank of Spain, EC, IMF, OECD and FUNCAS.

3. Macroeconomic forecasts: analysis *ex-ante*

3.1 General remarks

Government macroeconomic forecasts for 2017 use the most updated short-term information from indicators and the most recent national accounting data available on the date of submitting the scenario, including the latest quarterly national accounting update, published in early March. These feature as the main change in the macroeconomic outlook update with regard to the baseline scenario for the Draft Budgetary Plan Update for 2017**.**

The forecasts for the draft General State Budget for 2017 do not incorporate additional fiscal measures to those stated in the Draft Budgetary Plan Update from December 2016. In drafting this report, no knowledge of the incorporation of new budgetary measures aiming to guarantee the deficit target of 3.1% of GDP in 2017, was available in addition to those announced in December 2016.

Although some progress has been made with respect to previous reports, the information accompanying the official macroeconomic forecasts is deemed insufficient. For the methodologies, assumptions and parameters supporting the forecasts, the Government –as in the case of the last Stability Programme Update– provides an explanatory box on the basic methodology used. This is a step forward, but still not sufficient in terms of transparency, understanding and the ability to reproduce forecasts.[6] Moreover, the minimum information necessary to guarantee and make explicit the connections among the main variables in the macroeconomic scenario, and between these and the budget scenario; the integration of the main outlook variables with the granularity befitting the simplified national accounting framework; and a detailed, separate assessment of the macroeconomic impact of the budget measures on the forecasting horizon are likewise lacking.

3.2   Forecast analysis criteria

The aim of subjecting Spanish Government forecasts to analysis ex-ante is to assess whether they are realistic, and whether they define the most likely macroeconomic scenario or one that is more prudent. First of all, therefore, the forecasts are checked for any bias by comparing them against those of other institutions, as in previous years. The methods, parameters and assumptions underpinning the forecasts are revised, as far as the available information allows, and a check is made to determine whether the most updated information was used for the forecasts.

An analysis is conducted to establish how realistic the forecasts are for each variable, using models that establish a statistical relationship between the different variables and with behavioural equation models that relate each variable to their fundamental determinants. These partial results on the likelihood of forecasts for each variable are subsequently integrated into a macroeconomic scenario, guaranteeing the internal consistency of the set of related variables in national accounts, as well as any risks that exist in that scenario.

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[6] Article 4.5 of Directive 2011/85/EU requires member States to publish the relevant methodologies, assumptions and parameters underpinning their macroeconomic and budget forecasts.

Overall, the results from these comparative checks assesses whether or not the macroeconomic scenario contained in the draft General State Budget for 2017 is deemed the most likely in the light of the bias analysis *ex-ante* or a more prudent scenario. A more prudent scenario would contemplate the materialisation of some of the risks identified in the baseline or neutral scenario, that are detrimental to economic activity and to the correction of existing imbalances.

3.3   Analysis of forecasts

3.3.1   The international environment

The basic hypotheses underpinning the macroeconomic scenario for the draft General Government Budget for 2017 are deemed feasible and in some aspects, prudent. This scenario presents plausible assumptions in the light of the most recent forecasts by international organisations and the latest developments in commodities and debt markets (see charts C.1 and C.3 at annex). The macroeconomic scenario in the draft General State Budget for 2017 depicts a prudent profile for developments in the euro zone. Despite the ECB or the European Commission making upward adjustments, the draft General State Budget for 2017 reflects a moderate growth scenario for leading trading partners in the euro zone and, therefore, a smaller potential knock-on effect for the Spanish economy. As for oil prices, forecasts have been revised upwards but, to date, remain above the figures shown in futures markets; this may allow some margin for restraining price increases. Lastly, assumptions made relating to the interest rates curve have remained relatively constant, both short- and long-term, above market expectations as reflected in the yield curve.

Recovery in the global economy appears to be more robust than envisaged by many agents and institutions a few months ago. This improvement is also reflected, to a lesser degree, in the forecasts referring to the major economies in the euro area, despite threats from certain underlying risks. Consequently, the European Commission, in its latest forecasting exercise in February 2017, has made a slight improvement to its forecasts for growth in the euro area. This recovery has been buttressed by several favourable factors, such as relatively low oil prices, depreciation of the euro in the past, accommodative monetary policies and a broadly neutral fiscal policy position. The implementation of structural reforms in some member States, particularly in the labour market, has contributed as well to boosting the recovery. Private consumption has continued to be the main driver of growth in the euro area, while investment has turned out to be rather disappointing. Persistently weak investment throws a shadow of doubt on the sustainability of recovery and the economy's potential growth. Similarly, the degree of uncertainty is increasing, driven

by the uncertain results of Great Britain's negotiations over Brexit and by the upcoming elections in several big economies of the European Union. Likewise, the way the new US Administration's economic policies are established adds certain upward risks related to tax incentives and a more restrictive monetary policy by the Federal Reserve. However, this has also opened up the possibility of isolationist and protectionist policies that would be harmful to the global and the European economy, should they be promulgated.

The hypotheses regarding the performance of Government debt securities are within prudent limits, in line with short-term market expectations, but may be found overly prudent in the longer term. The interest rate trend for Government debt at 10 years forecast in the macroeconomic scenario in the draft General State Budget stands at 2 pp. in 2017, up from 1.4 pp in 2016. These forecasts are above the yields implicit in the futures markets (1.7 pp for 2017) and would involve the extension of the risk premium with respect to Germany's 10-year benchmark, within a context of the ECB's progressive normalisation of monetary conditions, in line with the recovery in the evolution of prices.

The path followed by oil prices, though not out of line with futures markets and the forecasts by the main international organisations, may turn out to be prudent. The hypothesis for oil prices has been revised upward with respect to the Draft Budgetary Plan Update 2017. This follows suit with the repercussions from the OPEC's agreement at the end of last year to reduce production, which have led to a steady increase in prices to reach $55 per barrel. Nonetheless, in the last month oil prices have slowed, dropping to around $50 per barrel, indicating a return to normal limits and a possible future stabilisation around this figure.

The prudence shown in the assumptions for the external environment is more significant still, given risks for the near future currently facing the global economy. In this direction, as pointed out in the latest report on forecasts by the OECD (see the OECD Interim Economic Outlook, March 2017), a range of risk factors –should they materialise– could negatively affect world economy growth. To begin with, the change of cycle in interest rates as of mid-2016 and the widening gap in these rates among leading economies increase the risk of exchange rate volatility. Some advanced economies also continue to experience vulnerabilities owing to the rapid increase in property prices. Economies in emerging markets, for their part, face considerable risks, including the increase of corporate debt. Lastly, the materialisation of a 'non-inclusive' growth leading to greater inequalities, not only among countries but also within them, is viewed as a threat to developed and emerging countries alike, and to international trade operations.

3.3.2 GDP and the composition of demand

In this section, owing to the recent delivery of the latest official macroeconomic forecasts (December) and the corresponding report issued by AIReF, it was deemed appropriate to focus on the differences between the two scenarios submitted by the Government. This comparison is shown in Chart C.2.

The forecast for real GDP growth in 2016 advanced in December's Government report matches the year-end figures published by INE, despite differences in the final composition of growth. The Spanish economy has grown by 3.2% in real terms in 2016, as envisaged by the Government in the Draft Budgetary Plan Update. The contribution from domestic demand, however, has been smaller than expected (2.8 pp rather than 3.1 pp), and offset by a greater impact from the external sector (0.4 pp instead of 0.1 pp). Broken down into components, the greatest deviation has occurred in gross capital formation (0.7 pp), especially productive investment whose estimated growth of 7.5% was significantly greater than the observed rate of 5%. In turn, within the external sector, the largest forecasting errors are concentrated in Imports, which have performed at half the foreseen rate.

The Government forecast for 2017 remains at a growth rate of 2.5%, unaltered in comparison to the 2017 Draft Budgetary Plan Update, whereas panel forecasts for 2017 have suffered considerable upward revisions over the last four months. Since the release of the Report on the 2017 Budgetary Plan Update forecasts, the chief analysts on the forecasting panel have effected a notable upward revision of GDP growth for 2017, shifting the interquartile interval from [2.1%-2.4%] to [2.5%-2.7%].[7] In contrast, the official forecast has remained stable at 2.5%, which has caused its relative situation to move to its present position at the lower end of the interval (see the chart panel G.2). These forecasts appear to be prudent, in the light of the models used by AIReF, in a position at the lower limits of the confidence intervals (see the chart panel G.1).

In the composition of growth, the most outstanding feature in the Government macroeconomic outlook update is the downward revision of the contribution from domestic demand, which is reduced by seven tenths of a percentage point, held back mainly by a slowdown in Investment. Among the components of domestic demand, private consumption maintains a high growth rate (above 3%), which is coherent with an intense recovery in Employment and stable credit conditions for households. As in the case of the 2017 Budgetary Plan Update, the Investment foreseen by the Government for 2017 is expected to slow down, both in equipment and construction. This revision corrects the optimistic profile observed in previous

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[7] The panel of forecasts of reference in this report is that published by FUNCAS on 21 March 2017.

reports regarding productive Investment according to the models used by AIReF, but places Investment in construction at comparatively low growth rates, close to the lower limits of the intervals. Similarly, the low starting point after the deep recession in the sector, in conjunction with the recovery in housing and the absorption of surplus stock, casts some doubt on the deceleration in Investment in construction foreseen by the Government.

Public consumption has been revised downward slightly. Growth at 0.8% for 2017 is still deemed likely, although there are some upward risks. Public consumption at 2016 year-end showed a moderate growth of 0.8%, affected by, among other aspects, the adoption of a Non-Availability Agreement (AND) and the approval of a Closure order brought forward to July by the Central Government. The information available for 2017 on the Limitations to Non-Financial Expenditure for the General Government Administration sets a scene that is compatible with consolidation of the adjustment made in 2016. However, consolidating the adjustment that, in some cases, has required certain spending to be postponed to subsequent years, may begin to generate upward pressure in the execution of certain items and pose a risk to the public consumption projected for 2017. In addition, public consumption depends fundamentally on the behaviour of Autonomous Regions and Local Corporations. Therefore, the actions taken by the mentioned subsectors and proper implementation of the expenditure rule will be key to maintaining this aggregate within the foreseen levels. All in all, the Government forecast for 2017 that repeats the growth rate for 2016 (0.8%) is feasible, as it falls within the interquartile range of private and public forecasts, albeit near the lower limit.

The external sector contribution to growth has been corrected upward with respect to the previous forecasts, and the expected growth patterns in imports and exports submitted are deemed likely. Comparing the draft General State Budget forecasts for 2017 against the data observed in 2016 shows that exports will experience more rapid growth in 2017, supported by the expansionary tone foreseen in international markets and for activity in the euro area, within a context of exchange rate stability. These forecasts are in line with those put forward by private analysts, despite being more optimistic in their upper level than those drafted by international organisations. Growth in imports falls behind the 2017 APP forecasts but gains momentum in comparison with data for 2016. Once more, these forecasts are consistent with those of private analysts but more optimistic than international organisations'. However, this stronger dynamic appears to be out of line with the foreseen slowdown in domestic demand and, particularly, in gross capital formation, which would have a damping effect on imports. The downward risk factors mentioned in previous reports do not appear to be having any significant effect on developments in the external sector. These factors are concentrated in the specific materialisation

throughout this year of the Brexit process, pending since the middle of last year, and the still more uncertain and unclear impact of changes in US trade policies.

Greater dynamism in employment, as shown in the Government Draft Budgetary Plan Update forecasts in December, is likely and in line with the consensus and AIReF's internal forecasts. The employment number in the Spanish economy for 2017 falls within the confidence bands in AIReF's comparative models and very close to the panel average. Nevertheless, this fact, together with existing upward risks to real growth (currently at the lower limit of the intervals) implies the disappearance of the gap between the rates of growth of GDP and employment, that would appear to be biased downward, even assuming the evidence of structural changes in the operation of the labour market that would reduce the growth threshold required for generating employment.[8]

Concerning prices, the trend in compensation per employee is deemed likely, while the trend for the deflator in private consumption appears to be restrained or facing upward risks. On the one hand, compensation per employee for 2017 is in line with the panel, in an environment of moderate growth in labour costs. However, the restrained evolution of the private consumption deflator seems to face upward risks deriving from the greater increase in prices, both in their underlying components and energy factors. The relation between salaries and the private consumption deflator implies a limited loss in workers' purchasing power. This trend falls without the different analysts' forecasts, which project more dynamic prices and a lower pass-through to wages. On the other hand, growth in the public consumption deflator for 2017 (+1%) is slightly below that of the economy overall (1.5%) and of the trend in salaries (1.3%). Therefore, an implicit trend can be detected in compensation per public employee consisting in the announced measures for an increase of 1% and the negative base effect for 2017 that led to the salary bonus being returned in 2016.[9]

Regarding main revenue projections before transfer to Territorial Administrations, the uncertainty mentioned in the Report on the macroeconomic forecasts in the 2017 APP has declined in view of the 2016 year-end budget information and the latest revenue data. The forecasts given in the 2017 APP already included the impact of the budgetary measures announced in December 2016 that allowed the borrowing requirement target of 3.1% of GDP to be reached in 2017, as agreed by Council Decision on 8 August 2016.[10] The public and private institutions' consensus has incorporated this effect over recent months,

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[8] The gap between growth in GDP and private-sector employment is 0.4 pp for the period 1996-2016. There is evidence, however, of a reduction of this difference following the latest labour reform (Cuerpo, Geli and Herrero 2017).

[9] It should be noted that the effect of the returned salary bonus in 2012 on the growth rate of public employee compensation in 2016 has caused a downward bias on the public consumption deflator in 2017.

[10] Stability and Growth Pact

correcting its interquartile range for the general government deficit in 2017 from [3.5%-3.8%] in December to [3.2%-3.6%] at present, thereby giving credibility to the announced measures. The most recent data available for revenue support this trend, clearing some of the uncertainty over the ultimate impact of these measures. It should be remembered that the information for 2017 is as yet scarce, and it will be necessary to conduct effective monitoring throughout the year to assess the adequacy of the measures to the set targets and the achievement of the Government's estimated impact. Finally, uncertainty remains regarding the potential macroeconomic impact of these measures. In particular, those directly affecting companies and their capacity to absorb the impact of normative changes without these altering their investment or hiring decisions (through the existence of liquidity buffers and access to new credit).[11]

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[11] The estimated impact on enterprises is derived from the sum of the impact of reforms relating to Corporate Tax (limitation of negative tax bases and deductibility of losses on own funds) and the limitations to delaying payments to the Public Administration.

4. Conclusions, endorsement and recommendations

AIReF, on the basis of exogenous assumptions and defined policies, endorses the Government's macroeconomic forecast. AIReF deems the Government macroeconomic scenario accompanying the 2017 Draft General State Budget to be prudent overall.

The assumptions reflecting risks deriving from the external environment are viewed as prudent. The hypotheses regarding growth among principal partners, the trend in oil prices, the cost of financing debt and the exchange rate are deemed prudent, as they show a more unfavourable trend for these factors than assumed in more recent forecasts by international organisations and market assessments.

The composition of growth is deemed likely, with domestic demand driving the economy jointly with a positive contribution from the external sector. Among the components of the domestic demand, private consumption maintains a high growth rate (above 3%), which is in line with an intensive recovery in Employment and stable monetary conditions. In turn, the trend in public consumption is viewed as feasible despite upward risks. As for investment, the Government's updated forecasts envisage a more pronounced deceleration than projected in the 2017 Draft Budgetary Plan Update, with growth rates for Investment in construction presenting a downward bias compared both with consensus figures and with AIReF's models results. The External Sector contribution is also considered to be likely, as it stands on moderately positive ground and is in line with AIReF's internal forecasts.

The most recent indicators on economic developments and the information regarding year-end budget figures for 2016, have had a moderating effect on risk assessment and uncertainty in the forecasts for 2017. On the one hand, there are upward risks with respect to the official GDP forecast, essentially deriving from factors boosting short-term growth. As for domestic demand, gross fixed capital formation deserves special mention, as it is currently at the lower end of the panelists' interval and may benefit from the consolidation of the recovery in the property market and the absorption of surplus stock of housing. Similarly, the degree of uncertainty on external demand appears to be limited, but may increase driven by the uncertain results of Great Britain's negotiations over Brexit and by the upcoming elections in several big economies of the European Union . Likewise, the manner in which the new US Administration's economic policies are designed adds certain risks related to a more restrictive monetary policy by the Federal Reserve, and protectionist policies that, if materialized, would be harmful to the global and the European economy.

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On the basis of its analysis, **AIReF deems the progress made by the Government concerning transparency and the dissemination of information to be limited.** In this line, AIReF believes that greater transparency would lead to a positive effect in terms of Spanish economy credibility and, therefore, makes one recommendation and two suggestions for good practices.

AIReF recommends the Government:

1. **To accompany the macroeconomic outlook with a "no policy change" scenario, and a separate quantification of the impact from the adopted or envisaged measures**, in order to better understand the forecasts and to make explicit at all times the connection between the macroeconomic outlook and the budget scenario.

AIReF also submits to the Government two suggestions for good practices:

1. To integrate the key elements in the forecasts into a simplified national accounting framework, thus enabling the public to understand the connections between economic activity, demand and expenditure, on the one hand, and income flows and borrowing requirements, on the other hand.

2. To provide more information on the relevant methodologies, assumptions and parameters underpinning the forecasts, thus adhering to the requirements set forth in Directive 2011/85 on budget frameworks, and article 29 of the LOEPSF that defines the content of General Government sector budget plans in the medium term.

ANNEX: TABLES AND CHARTS

Tables

C.1)   Basic hypotheses for the 2016-2017 scenario

Annual percentage change, unless otherwise indicated

	2016	2017 (F)
Short-term interest rates (Euribor at three months)	-0.3	-0.3
Long-term interest rates (Government debt at 10 years, Spain)	1.4	2.0
Exchange rate (USD/EUR)	1.1	1.1
World GDP growth	3.0	3.4
GDP growth in the euro zone	1.7	1.6
Spanish export markets	2.3	3.3
Oil prices (Brent, USD/barrel)	44.8	56.4
(F) Forecast		
Sources: European Commission and Ministry of Economy and Competitiveness.		

C.2)   Government macroeconomic forecasts

|		FORECASTS		DIFFERENCE
		PGE (General State Budget) (March 2017)	APP (December 2016)	PGE-APP
	2016	2017	2017	2017
Real GDP by demand components (% var)				
Final consumption expenditure	2.6	2.1	2.2	-0.1
-Final consumption expenditure of households (a)	3.2	2.6	2.7	-0.1
-Final consumption expenditure by government	0.8	0.8	0.9	-0.2
Gross capital formation	3.8	2.5	3.3	-0.8
-Gross fixed capital formation	3.1	2.6	3.4	-0.8
Construction	1.9	1.9	2.6	-0.7
Capital goods and biological resources	5.0	3.5	5.0	-1.5
-Changes in inventories (contribution in pp)	0.1	0.0	0.0	0.0
Domestic demand (contribution to GDP growth)	2.8	2.1	2.4	-0.2
Exports of goods and services	4.4	5.1	5.9	-0.7
Imports of goods and services	3.3	4.3	5.9	-1.7
Net foreign demand (contribution to GDP growth)	0.5	0.4	0.1	0.3
Real GDP	**3.2**	**2.5**	**2.5**	**0.0**
GDP at current prices: MM€	1,113.9	1,159.9	1,162.2	-
GDP at current prices: % var	3.6	4.1	4.0	0.1
PRICES (% var)				
GDP deflator	0.3	1.6	1.5	0.1
Private final consumption expenditure deflator	-0.2	1.5	1.4	0.1
LABOUR COSTS AND EMPLOYMENT (% var)				
Compensation per employee (labour cost)	0.0	1.3	1.3	0.0
Compensation of employees (labour cost)	3.1	3.8		
Total employment (b)	2.9	2.5	2.4	0.1
Salaried employment (b)	3.1	2.6		
Productivity per employee (b)	0.4	0.1	0.1	0.0
Unit labour costs (ULC)	-0.4	1.2	1.1	0.1
Memorandum items (Labour Force Survey data)				
Unemployment: % economically active population	19.6	17.5	17.6	-0.1
FOREIGN SECTOR (% GDP)				
Current account balance (c)	2.0	1.9	1.8	0.1
Net lending (+) / borrowing (-) vis-à-vis the rest of the world (c)	2.4	2.3	2.3	0.0
(a) Households and ISFLSHs (b) Full-time equivalent employment (c) Balance of payments SOURCE: INE and Ministry of Economy and Competitiveness				
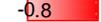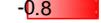
C.3)   Forecasts by international organisations

(Annual percentage change, unless otherwise indicated)

		2016	2017	Change (1)
ECB **(March 2017)**	World GDP (excluding the eurozone)	3.1	3.5	0.0
	Eurozone GDP	1.7	1.8	0.2
	World Trade (imports of goods and services, excluding the eurozone)	1.2	3.4	0.6
	Brent oil prices (USD per barrel)	44.0	56.4	9.0
	Three months Euribor (%)	-0.3	-0.3	0.1
	Interest rates on Government debt in the eurozone at 10 years (%)	0.8	1.3	0.7
	Exchange rate USD/EUR (level)	1.11	1.07	0.0
	Nominal effective exchange rate for the euro	3.7	-1.0	-0.9
IMF **(WEO January 2017)**	World GDP	3.1	3.4	0.0
	Eurozone GDP	1.7	1.6	0.1
	GDP in the EU	1.9	1.7	0.0
	Trade in goods and services	1.9	3.8	0.0
	Brent oil prices (USD per barrel)	42.7	51.2	-1.4
	Three months Libor (%)	-0.3	-0.3	0.1
European Commission **(February 2017)**	World GDP	3.0	3.4	0.0
	Eurozone GDP	1.7	1.6	0.1
	GDP in the EU	1.9	1.8	0.2
	World imports of goods and services	1.7	3.3	0.0
OECD **(November 2016, Economic Outlook)**	OECD GDP	1.7	2.0	0.0
	GDP in the euro area (updated March 2017)	1.7	1.6	0.0
	Trade in goods and services	1.9	2.9	0.0
Market expectations **(March 2017)**	Long-term interest rates (Government debt at 10 years, Spain)	1.4	1.7	0.0
	Brent oil prices (USD per barrel)	43.3	53.9	-0.7
(1) The change expresses the difference between assumed and actual figures in the report on the 2017 Stability Programme Update				

Charts

G.1)   Forecasting errors and biases 2013-2016

□ Government error (G-R) ■ Consensus error (C-R) ◆ Bias (G-C)
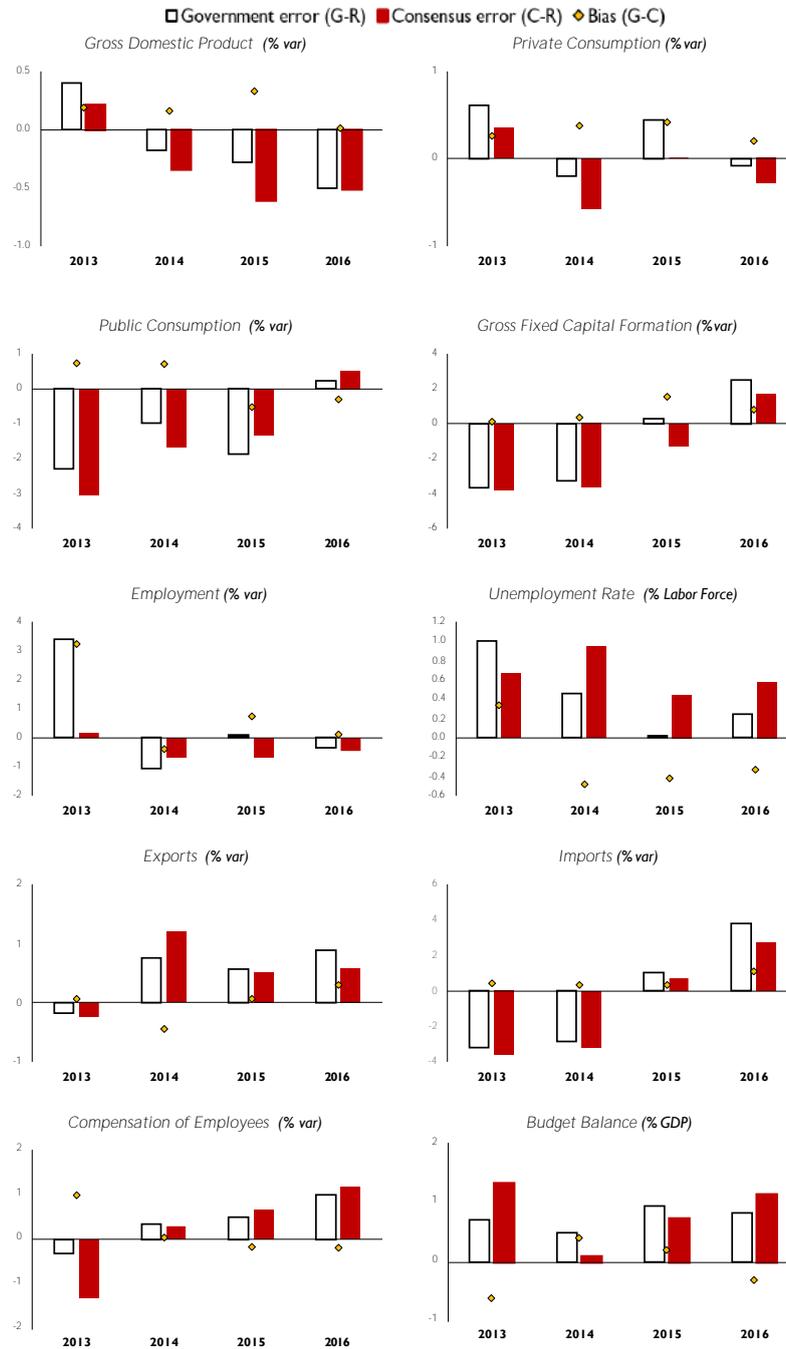
Sources: Own elaboration based on INE, FUNCAS and AIReF's estimates.

G.2) Forecasts for the Spanish economy 2017

Gross Domestic Product

Government Budget

Private Consumption

Public Consumption

Gross Fixed Capital Formation

Employment

Exports

Imports

Consensus interval — Government — Banco de España — IMF — EC — OECD — Consensus
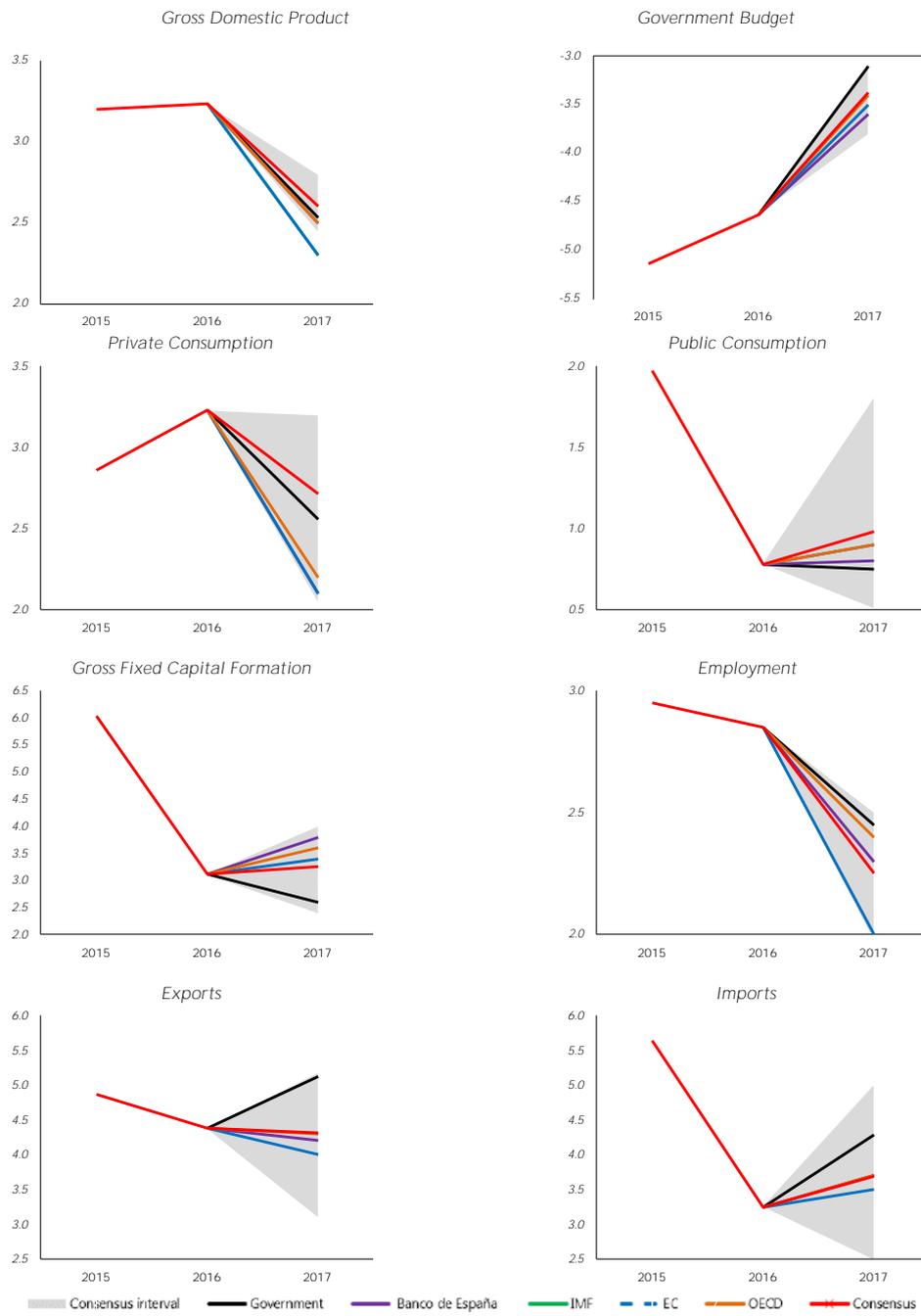
Sources: Own elaboration based on INE, MINECO, FUNCAS and AIReF's estimates.

G.3)   Government forecasts and AIReF uncertainty ranges

GDP
(% var volume)

3.2 32
2.5

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Total employment
(% var)

3.0 29 2.4

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Private Consumption
(% var. volume)

2.9 3.2 2.6

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Public Consumption
(% var volume)

2.0 0.8 0.8

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

GFCF. Equipment and cultivated assets
(% var volume)

8.8 5.0 3.5

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

GFCF. Construction and intelectual property
(% var volume)

4.6 2.1 1.9

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Exports
(% var volume)

4.9 4.4 5.1

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Imports
(% var volume)

5.6 3.3 4.3

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Sources: Own elaboration based on INE, MINECO and AIReF's estimates.

METHODOLOGY ANNEX

For the Report on Macroeconomic Forecasts, a range of econometric tools have been used covering a relatively broad methodological spectrum. This note provides a summary of their main characteristics with the aim of describing the methodology supporting the report.

The first section presents the uniequational structural models and their design methods. These models have served as a basis on which to examine the consistency of official forecasts for the behaviour of their macroeconomic determinants. The technique applied uses quarterly data and estimation methods.

The second section describes the employee reduced-form multivariate model. This model shows the dynamics for the main aggregates for real activity in the macroeconomic outlook and allows quarterly confidence intervals for the envisaged trends in these aggregates, with very little a priori conditioning. This model also uses quarterly data and estimate procedures.

The third and last section briefly details the dynamic factorial models used for short-term (2 quarters) forecasts of GDP and its components, that permit the impact of present time information on said aggregates to be reflected.

1   Uniequational structural models

For a quantitative assessment founded on a structural formula suggested by economic theory, several behavioural equations have been used based on the representation of error correction. A simplified presentation using Excel spreadsheets is available on the AIReF website for use by analysts.

The general principle in this approach is, first, to define a behavioural relationship between a given variable and its determinants, as suggested in economic theory. This theoretical relationship is quantified by means of a linear relationship characterising the long-term behaviour between the variable that is being described and its conditioning factors. This equation defines what is known as the "equilibrium relationship", acting as point of attraction toward which the variable under analysis should converge, but this is not always the case period for period. This deviation or error between the value compatible with the theoretical and the observed fundamentals mainly reflect shocks that distort long-term relations between the variable and its fundamental properties.

The short-term dynamic, usually characterised by the trend in the quarterly growth rate, results from combining two elements. The first of these is the partial correction

of the error arising in the long-term relationship. This adjustment quantifies the rhythm in which the variable closes the gap with the level compatible with its fundamentals in the long term. The second is a purely statistical, short-term dynamic that is complementary to the first and that defines the empirical relationship between the growth rates for the variable being described and the rates that apply to its determinants.

This equation, known as error correction, is supported by the econometric method known as co-integration analysis, that conducts comparative checks on any stable, well-defined long-term relationships for the quantification, in a second step, of the short-term dynamic.

Below is a brief description of the equations used herein: in all the equations, the frequency of observation was quarterly, the data were adjusted to seasonality and the calendar, and the sampling interval ranged from 1995:TI to 2015:TI.

1.1 Final household consumption

The equation describing the demand for final household expenditure considers that the trend depends on the gross real income available to households, their financial and real estate (taken separately) wealth, the unemployment rate, the value of real credit available for consumer goods and the real interest rate. The latter is defined as the difference between the three-month Euribor and the deflator to final consumption expenditure.

1.2 Investment in fixed capital: capital assets

Companies are expected to determine their investment in capital goods according to the evolution of the aggregate demand, the envisaged profitability of their investment projects, the price of the labour factor, the user cost of capital and the use of the productive capacity. Aggregate demand is approximated in volume by means of the Gross Domestic Product. The expected profitability measure is determined from Tobin's Q, estimated as the quotient of the IBEX-35 over the productive capital stock. The price for the work factor will be given by the compensation per employee.

1.3 Fixed capital investment in construction

The determinants of gross fixed capital formation in construction included in this equation are the real available gross income, financial wealth and real estate wealth in the household sector. Further factors are the unemployment rate, the flow of credit for housing purchase and refurbishing, relative prices of freehold property, deflated

by the price index for expenditure in final household consumption and the Government debt ratio with respect to GDP as global indebtedness indicator.

1.4 Exports of goods and services

The volume of exports in goods and services is set to depend on a variable that approximates external demand for goods and services, and on prices relative to exports of products that are substitutes for said goods, produced and exported by the rest of OECD countries.

The variable that approximates the external demand for goods and services is global trade in goods by volume, provided by the Dutch Central Planning Bureau (CPB). In addition, as a variable for relative prices, the competitiveness trend index is taken, calculated through a comparison of domestic consumer price indices with those of the OECD, adjusted for changes in nominal exchange rates.

1.5 Imports of goods and services

Demand for Imports and goods and services is set to depend on the capacity for expenditure by the units residing within the economic domain, and on prices of imported goods in relation to their domestic substitutes. Thus, imported goods and services compete with those produced internally in the overall expenditure.

As the variable representing the demand for imported goods and services, an index is designed that ponders each component in the final demand (Consumption, Investment and Exports) according to its share of imports. The indicator applied for relative prices is the quotient of the deflator of imports and goods and services over the deflator of domestic demand.

2   Reduced-form multivariate model

The Bayesian Vector of Autoregressions (BVAR) with exogenous variables was used for the assessment of the projections given in the macroeconomic outlook accompanying the PGE-2016.

This type of models offer both flexibility and objectivity. Flexibility is achieved through allowing a high degree of adaptability to the dynamic observed. Objectivity is assured since, having determined the set of variables to model, estimates for the model parameters are conducted according to statistical, objective and replicable criteria.

The Bayesian component in the model has been incorporated to improve its predictive performance, and captures purely statistical interactions of the variables with the dynamics, in part or in whole of the series analysed. Likewise, specifically included in this extra-sample information component are behavioural traits of the economy in the medium term.

In the BVAR model with exogenous variables, the level of any variable at a given moment is expressed by the linear combination of four parameters: lagged values of the variable itself (dynamic), offset values for the remaining variables involved in the model (crossed dynamic), contemporary values of exogenous variables, and a purely random innovation that captures any other aspect that is not attributable to the variables taken into account in the system.

The weight of each component is determined empirically by finding the best sampling fit, and the Bayesian elements offset the effects of over-rating that may exist due to the high number of parameters being estimated.

Projecting the aforementioned BVAR model forward gives both specific prediction values and their associated confidence intervals. In particular, the confidence intervals quantify the degree of uncertainty attributable to the predictions of different variables for different horizons.

The endogenous variables included in this model are: the GDP deflator, the GDP volume index, the full-time employment equivalent, real credit (financing to business and households deflated by the core CPI) and net incomes with cyclical sensitivity (defined as the sum of taxes on production and imports, current taxes on income and wealth, and social contributions, from which unemployment benefits are deducted) as a percentage of GDP. The exogenous variables considered are: the exchange rate of the euro, the dollar price of oil, the EU GDP, interest rates (loans requested by companies of up to 1 million euros) and a constant term.

Report

A secondary BVAR model is also used to represent the joint dynamic of five series that describe the breakdown of GDP from the viewpoint of demand. The variables studied are: final consumption by households and not-for-profit institutions at the service of households (ISFLSH); consumption by Public Administrations; gross fixed capital formation; exports of gross fixed capital formation and imports of goods and services.

3   Dynamic Factor Models

For short-term (2 quarters) predictions of GDP and its main components of demand (private consumption, public consumption, investment in equipment, investment in construction, exports and imports of goods and services), dynamic factorial models are used, synthesized on the model known as MIPRED[12]. The joint estimates for GDP and its components provides a more comprehensive and detailed perspective of the economy, allowing the composition of growth to be identified, its external and domestic origins. These in turn lead to determining the composition of Final Consumption and Investment in Domestic Demand.

Technically, estimates are made in two stages:

In the first, GDP and each of its components are predicted independently, following the dynamic factorial model methodology for real time forecasting. Forecasts are based on a combination of short-term information, issued at different frequencies (quarterly and monthly), using the respective dynamic factorial models. This combination allows forecasts to be updated as new information becomes available for the indicators in the model, providing a real-time or permanently updated vision of the aggregate status of the Spanish economy.

The methodology used in each of the models consists of the following stages:

1. Seasonal and calendar adjustments for all indicators in the system.

2. For quantitative indicators, the variation rates are calculated for the immediately preceding period, in order to obtain a short-term growth signal. Qualitative indicators are not transformed, as these offer an immediate (directional) interpretation of growth.

3. All the indicators, whether qualitative or quantitative, are typified rendering their mean as zero and their variance as one.

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[12] See Real time GDP forecasts

4. The series thus obtained are combined into a dynamic factorial model, breaking down its temporal evolution into a part attributed to elements that are common to all and another part that is specific to each.

5. The dynamic factorial model is represented in the space of states, combining a transition equation (that describes the system dynamic) and a measure equation (that defines the connection between the observed series and their underlying factors).

6. Estimates for the parameters in the model are made maximising their feasibility. Such maximisation takes into account both the presence of series with a different sampling frequency (monthly or quarterly) and asymmetrical series lengths among those included in the panel of data, either because they do not all commence at the same time or because they do not all end in the same period.

7. Having estimated the dynamic factorial model, its representation in the space of states permits, by means of Kalman filtering, both the forward projection of the series comprised in the model and the calculation of the typical deviations from said projections, thus obtaining a measure of the uncertainty surrounding them.

8. One of the series making up the set of series used is the aggregate, for which forecasts are obtained simultaneously with those of the remainder of indicators. In this manner, the internal consistency of forecasts is assured.

9. Whenever new data becomes available for any of the indicators in the model, the above steps are repeated, reviewing all forecasts depending on the sign and magnitude of the innovation. This continuous updating process defines the real-time nature of the system.

In the second stage, individual forecasts are reconciled with those for GDP, by means of the balancing method proposed by Van Der Ploeg (1982), in which individual forecasts are combined with the accounting restriction that establishes that GDP growth should be equal to the aggregation of contributions to its growth from its components. Final forecasts are the result of adjustments to individual forecasts according to the discrepancies observed between the sum of the corresponding contributions to GDP growth, and GDP growth foreseen in its own model, bearing in mind the historical correlation among the series for contributions to growth. The initial forecasts are thus modified, taking into account their discrepancies when incorporating accounting restrictions. These discrepancies are weighted according to their precision, that is, inversely to the uncertainty associated with initial estimates.

This procedure has several desirable properties:

1. The greater the variance in the initial forecast, the greater the magnitude of the revisions, as an absolute value. In other words, the greater the uncertainty regarding the initial forecast, the greater the amount in the modification it may be subject to.

2. If a given preliminary estimate is considered to be known with absolute precision, no adjustments are made in the corresponding forecast.

3. When the historical correlation between two components is positive, their revisions are made in the same direction: both upward or both downward. If, on the contrary, they correlate negatively, adjustments will take opposite directions: one upward and the other downward, or vice-versa.

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